

WHAT IS CLAIMED IS:

1. A method of reducing a zero-echo comprising:
transmitting a pulse to a line to be tested;
generating a zero-echo canceling signal based on the transmitted pulse;
receiving a zero-echo;
adding or combining the zero-echo and the zero-echo canceling signal to reduce the received zero-echo.

2. The method of claim 1 and further comprising:
calculating an error signal as a difference between the zero-echo and the zero-echo canceling signal.

3. The method of claim 2 and further comprising adjusting the zero-echo canceling signal based on the error signal to decrease the error signal and decrease a received zero-echo.

4. The method of claim 1 and further comprising receiving a full-path reflection, wherein the zero-echo has been sufficiently cancelled or attenuated based on said adding or combining to allow the full-path reflection to be detected.

5. The method of claim 1 wherein said transmitting a pulse comprises:
transmitting a pulse to a line to be tested, a portion of the transmitted pulse also propagating via a short path towards a receiver as the zero-echo.

6. The method of claim 4 wherein the adjusting comprises adjusting the value of a voltage bridge or adjusting the value of a variable resistor.

7. An apparatus comprising:
a pulse transmitter to transmit a pulse to a line to be tested;
a receiver adapted to receive a reflection of the transmitted pulse; and
a zero-echo canceling system coupled to the transmitter and receiver, the zero-echo canceling system adapted to at least partially cancel a received zero-echo by generating a zero-echo canceling signal based on the transmitted pulse.

8. The apparatus of claim 7 and wherein the zero-echo canceling system comprises a zero-echo canceller adapted to generate a zero-echo canceling signal.

9. The apparatus of claim 7 and wherein the zero-echo canceling system comprises:

a voltage divider coupled to the transmitter;
a zero-echo canceller coupled to the voltage divider;

a combining circuit coupled to the voltage divider and the zero-echo canceller, the combining circuit adapted to combine a zero-echo received from the voltage divider and a zero-echo canceling signal received from the zero-echo canceller.

10. The apparatus of claim 9 wherein the combining circuit comprises an adder.

11. The apparatus of claim 9 wherein the combining circuit comprises a subtraction circuit.

12. The apparatus of claim 8 wherein the zero-echo canceller comprises a variable voltage divider.

13. The apparatus of claim 12 wherein the variable voltage divider comprises a variable resistor.

14. A modem comprising:
a transceiver;
a processor coupled to the transceiver;
a zero-echo canceling system coupled to the transceiver and the processor, the zero-echo canceling system adapted to at least partially cancel a

zero-echo by generating a zero-echo canceling signal based on a transmitted pulse.

15. The modem of claim 14 and further comprising a memory coupled to the processor.

16. The modem of claim 14 wherein the zero-echo canceling system comprises:

a voltage divider coupled to the transmitter;

a zero-echo canceller coupled to the voltage divider;

a combining circuit coupled to the voltage divider and the zero-echo canceller, the combining circuit adapted to combine a zero-echo received from the voltage divider and a zero-echo canceling signal received from the zero-echo canceller.

17. The modem of claim 14 wherein the modem comprises a cable modem.

18. The modem of claim 14 wherein the modem comprises a DSL modem.